

0144958	DRILL, 1/2"	DP4700	367787E	\$129	5130	1987	M12	4400
0396387	BUFFER	4278	4465	\$343	5130	1986	M12	4400
0397126	PUMP, HYDRAULIC	3	3703	\$3,175	5130	1986	M12	4400
0398930	SAW, BAND	6225	0457174817	\$531	5130	1983	M12	4400
0752362	SANDER, DISC ELECTRIC	6072	007034640	\$193	5130	1984	M12	4400
0753640	WRENCH, IMPACT	1010	92554	\$400	5130	1984	M12	4400
0753643	WRENCH, IMPACT	1010	N/A	\$400	5130	1984	M12	4400
0753645	WRENCH, IMPACT	N/A	N/A	\$400	5130	1984	M12	4400
0753650	SAW, JIG	7580	N/A	\$55	5130	1984	M12	4400
0812289	WRENCH, IMPACT 1/2"	ET1550	10612	\$169	5130	1989	M12	4400
1010675	SANDER/GRINDER, 5"	6141	763-12615	\$148	5130	1989	M12	4400
1010703	DRILL, ROTARY HAMMER	TE14	04-160737	\$315	5130	1989	M12	4400
1012038	POWER DRIVE, ACTUATOR	68A	0010242	\$935	5130	1990	M12	4400
0036111	DRILL, MAGNETIC, PORTABLE	1967EVS	262156	\$1,377	5130	1992	M12	4400
1012371	HEAD, TORQUE MACHINE	3XLT	242	\$4,175	5130	1991	M12	4400
0036069	WRENCH, 3/8" AIR IMPACT	A1700E	94091166	\$126	5130	1993	M12	4400
1539538	DRILL, 3/8" CORDLESS	2872	79042	\$287	5130	1995	M12	4400
1539636	DRILL, 3/8" CORDLESS	DW972	129084	\$268	5130	1995	M12	4400
1539843	GRINDER, 4 1/2"	ET1345	23145	\$897	5130	1995	M12	4400
1540046	WRENCH, IMPACT 3/4"	IM5175	96059181	\$300	5130	1995	M12	4400
1541295	SAW, RECIPROCATING	S PANTHER	5610102	\$179	5130	1996	M12	4400
1541828	GRINDER, DIE	4292	6537	\$282	5130	1996	M12	4400
1541829	GRINDER, DIE	4292	7455	\$282	5130	1996	M12	4400
0042017	DRILL, 1/2" VSR	DW111	29581	\$182	5130	1997	M12	4400
0042018	DRILL, 1/2" VSR	DW111	29554	\$182	5130	1997	M12	4400
1910154	DRILL, 1/2" REVERSING	632	026236	\$175	5130	1997	M12	4400
1911461	DRILL, 1/2" REVERSING	1317	5537	\$106	5130	1997	M12	4400
1911239	DRILL, 1/2" REVERSING	1317	5630	\$106	5130	1997	M12	4400
1911388	SAW, 7 1/4" CIRCULAR	MAG 77	HE-886897	\$203	5130	1997	M12	4400
1939242	DRILL, 3/8" ANGLE	DA391D	697312	\$237	5130	1998	M12	4400
1939244	DRILL, 3/8" ANGLE	DA391D	697311	\$237	5130	1998	M12	4400
1539640	SAW, BAND	725	539664	\$497	5130	1995	M12	4400
1940885	WRENCH, IMPACT, 3/4"	2161P	A00C02002	\$640	5130	1999	M12	4400
1623107	WRENCH, AIR IMPACT, 3/8"	IM32	02220550	\$218	5130	2002	M12	4400
1623108	WRENCH, AIR IMPACT, 3/8"	IM32	02230018	\$218	5130	2002	M12	4400
1623109	WRENCH, AIR IMPACT, 1/2"	IM6100	01320916	\$208	5130	2002	M12	4400

List 2 (Classifications)

1623110	WRENCH,AIR IMPACT;1/2"	IM6100	02020896	\$208	5130	2002	M12	4400	
2156022	DRILL, CORDLESS	DW987	237444	\$251	5130	2002	M12	4400	
2156023	DRILL, CORDLESS	DW987	237437	\$251	5130	2002	M12	4400	
	TOTAL LINE ITEMS 165			\$54,623					\$54,623
Federal Supply Classification - Sets, Kits & Outfits of Hand Tools									
1623124	KNOCKOUT SET	7904SB	ZA42199VE	\$800	5180	2002	E1	4010	
0593893	CONTROL PANEL/CHECK OUT CRYG	10-2122-501	N/A	\$500	5180	1967	E25	3407	
0289682	PULLER SET	4292B	N/A	\$417	5180	1986	M12	4400	
0289850	TAP & DYE SET	S41HM	N/A	\$716	5180	1986	M12	4400	
	TOTAL LINE ITEMS 4			\$2,433					\$2,433
Federal Supply Classification - Accounting and Calculating Machines									
0132260	CALCULATOR, ELECTRONIC	P1421D	703842	\$323	7420	1986	E22	8301	
0132270	CALCULATOR, ELECTRONIC	P1215D	200335	\$161	7420	1986	E22	8301	
0132251	CALCULATOR, ELECTRONIC	P1421D	703843	\$323	7420	1986	M12	4400	
	TOTAL LINE ITEMS 3			\$807					\$807
Federal Supply Classification - Typewriter and Office Type Composing Machines									
1540158	TYPEWRITER, WHEELWRITER 3500	RITER 3500	11XZ198	\$828	7430	1995	C10	8201	
G033328	TYPEWRITER, WHEELWRITER 10	6783	11-0129286	\$365	7430	1988	E21	3305	
G033307	TYPEWRITER, WHEELWRITER 30	WW 30	11-0080814	\$812	7430	1988	E22	8301	
	TOTAL LINE ITEMS 3			\$2,005					\$2,005
Federal Supply Classification - Office Information System Equipment									
1542152	SCANNER, OPTICAL	636	3D6X000920	\$2,289	7435	1996	E2	4010	
2155812	SCANNER, OPTICAL	X12USL	W1C0305914	\$400	7435	2002	E21	3305	
1912639	SCANNER, OPTICAL	SSION 636	3D6X028181	\$1,345	7435	1997	E22	8301	
1941984	SCANNER, OPTICAL	T 3400CSE	CT06J1G1B6	\$110	7435	2001	E22	8301	
	TOTAL LINE ITEMS 4			\$4,144					\$4,144
Federal Supply Classification - Miscellaneous Office Machines									
1541062	SHREDDING MACHINE, PAPER	1200	929933	\$999	7490	1996	C10	8201	
1941840	LABELING SYSTEM, ELECTRONIC	WERMARK	VBUD124302359	\$4,488	7490	2001	C10	8201	
1541924	LABEL MAKER	LS2000	19587	\$1,601	7490	1996	E1	4050	

List 2 (Cleaner Receptions)

1940619	LABEL MAKER	LS2000	26627		\$1,589	7490	2000	E1	4050
1540403	LABELING SYSTEM	R XC PLUS	40157		\$995	7490	1995	E21	8304
1541719	LABELING SYSTEM	LS2000	19238		\$1,604	7490	1996	E28	4010
0042063	LABELING SYSTEM	LS2000	21377		\$1,928	7490	1997	E28	4010
1941589	LABELING MACHINE	INMAKER M	VMG3106869736		\$4,469	7490	2001	E28	4010
1622629	LABELING SYSTEM	LS2000	23632		\$1,328	7490	1999	E3	4075
2156188	SHREDDING MACHINE,PAPER	SHRED 220	N/A		\$423	7490	2002	M12	4400
	TOTAL LINE ITEMS 10				\$19,424				\$19,424
Federal Supply Classification - Office Supplies									
1012097	LETTERING SYSTEM	2580-00	JH011-21286		\$1,537	7510	1990	E22	8301
	TOTAL LINE ITEM 1				\$1,537				\$1,537
Federal Supply Classification - Phonographs, Radios, and Television Sets									
1010334	RECEIVER-REPRODUCER SET, TV	VT4490	301-9603308		\$600	7730	1989	C10	8201
1941537	RECEIVING SET, TELEVISION	PVC2022	C2AC21963		\$230	7730	2002	C10	8201
1912395	RECEIVING SET, TELEVISION	CT20G33W	LA80560246		\$335	7730	1998	E1	4010
0132900	RECEIVING SET, TELEVISION	JMR985PR	710230102		\$668	7730	1987	E21	3305
0396162	RECEIVING SET, TELEVISION	CTG2530	PQ545210		\$605	7730	1985	E21	8304
0592697	RECEIVING SET, TELEVISION	CT1310V	MB9350433		\$464	7730	1979	E21	8304
0132899	RECEIVING SET, TELEVISION	JMR985PR	710230216		\$668	7730	1987	E22	8301
1011668	RECEIVING SET, TELEVISION	CT1030M	KA0330194		\$660	7730	1990	E25	3407
0298879	RECEIVING SET, TELEVISION	JK985RR	505470430		\$668	7730	1985	E25	3407
1325238	RECEIVING SET, TELEVISION	CS20101	039767		\$290	7730	1994	E28	4010
1911431	RECEIVING SET, TELEVISION	13VT-H60	581283		\$386	7730	1997	M12	4400
1539861	MONITOR, TELEVISION	SSM121	139946		\$275	5836	1995	E25	3407
	TOTAL LINE ITEMS 12				\$5,849				\$5,849
Federal Supply Classification - Floor Polishers & Vacuum Cleaning Equipment									
1940658	CLEANER, VACUUM, ELECTRIC	WD17300	99293V1513		\$158	7910	1999	E1	4010
1223698	CLEANER, VACUUM, ELECTRIC	5433	04629		\$607	7910	1992	E21	8304
0752001	CLEANER, VACUUM, ELECTRIC	501	42511		\$90	7910	1984	E24	3305
1941616	CLEANER, VACUUM, ELECTRIC	QL6B-1C	N/A		\$298	7910	2001	E24	3305
1223697	CLEANER, VACUUM, ELECTRIC	5433	04622		\$607	7910	1992	E25	3407
1912174	CLEANER, VACUUM, ELECTRIC	RAFTSMAN	97352V3464		\$227	7910	1997	M12	4400
1939923	CLEANER, VACUUM, ELECTRIC	984A	N/A		\$803	7910	1998	M12	4400

List 2 (Classifications)

[illegible]

Summary Property Adjustments

SSC GOVERNMENT PROVIDED EQUIPMENT									
Summary Property Adjustments to Attachment J10 from Class Exceptions List 2 to List 1 No Class Exceptions									
Federal Supply Classification - 2330 - Trailers									
0593835	TRAILER, SEMI, HYDRAULIC	DGTW-1204	60668	\$36,274	2330	1965	E24	3305	
1224235	TRAILER, SEMI, HYDRAULIC	DGT-1204	60666	\$36,274	2330	1965	E24	3305	
0593839	TRAILER, SEMI, HYDRAULIC	DGT-1204	60667	\$36,274	2330	1965	E24	3305	
0593847	TRAILER, SEMI, HYDRAULIC	DGT-1204	60665	\$36,274	2330	1965	E24	3305	
1323527	TRAILER, TUBE BANK	6748	489715	\$11,118	2330	1961	E24	3305	
1323526	TRAILER, TUBE BANK	1597	489690	\$16,399	2330	1961	E24	3305	
1323525	TRAILER, TUBE BANK	1589	489537	\$16,783	2330	1961	E24	3305	
1323524	TRAILER, TUBE BANK	8205	489684	\$9,026	2330	1961	E24	3305	
1323523	TRAILER, TUBE BANK	9960	489719	\$26,103	2330	1961	E24	3202	
1323522	TRAILER, TUBE BANK	9096	489729	\$11,687	2330	1961	E24	3305	
1323521	TRAILER, TUBE BANK	6749	489718	\$10,659	2330	1961	E24	3305	
1323520	TRAILER, TUBE BANK	9404	489699	\$9,792	2330	1961	E24	3305	
1323519	TRAILER, TUBE BANK	9403	489683	\$9,792	2330	1961	E24	3305	
1323518	TRAILER, TUBE BANK	2542	489739	\$31,648	2330	1961	E24	3305	
1323517	TRAILER, TUBE BANK	6750	489731	\$10,639	2330	1961	E24	3305	
1323516	TRAILER, TUBE BANK	8343	489678	\$3,000	2330	1961	E24	3305	
1941011	TRAILER	941261-0	LAWU9412610	\$8,430	2330	1999	E3	4075	
	TOTAL LINE ITEMS 17			\$320,172					\$320,172
Federal Supply Classification - Hand Tools, Nonedged, Nonpowered									
G032896	WRENCH, TORQUE	6006A	N/A	\$125	5120	1988	M12	4400	
G032897	WRENCH, TORQUE	6006A	N/A	\$125	5120	1988	M12	4400	
0132808	WRENCH, TORQUE	TOR600B	20313	\$358	5120	1987	M12	4400	
0396681	WRENCH, TORQUE	TW600FR	N/A	\$419	5120	1986	M12	4400	
1173426	MULTIPLIER, TORQUE	6232	J787	\$1,450	5120	1991	M12	4400	
	TOTAL LINE ITEMS 5			\$2,477					
Federal Supply Classification - Measuring Tools									
0797402	CALIPER, 6" ELECTRONIC	PMF132	177990	\$140	5210	1986	E24	3305	
0591404	MICROMETER, OPTICAL	71-1110	104	\$1,342	5210	1965	E28	3300	
	TOTAL LINE ITEMS 2			\$1,482					\$1,482

Summary Provisions Adjustments

[illegible]

PART III – LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS

Attachment J-11

SAFETY & HEALTH PLAN

(NOT INCLUDED)

Safety and Health Plan

for the

NASA Test Operations Group Contract

31 August 2004

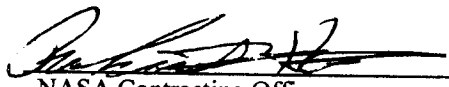
Submitted by Jacobs Sverdrup

b(4)

NTOG General Manager

b(4)


NTOG S&MA Manager



NASA Contracting Officer



NASA COTR



NASA Safety & Mission Assurance

Environmental, Safety, and Health Plan

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Foreword and Message to Employees

We all deserve a safe and healthful work environment. I am committed to ensure that our management team provides that environment for each of you at SSC and MSFC. We achieve maximum safety through the overall positive attitude of each individual, the manner in which you undertake each task, and the attitude you assume towards your work. These are the most important factors in the success of the mishap prevention program. We can achieve ultimate safety only when each of you embraces the goal to create an incident-free workplace, exhibits safe work habits when undertaking each task, and is attentive to safety standards and work documentation. With these objectives, combined with our genuine interest in protecting our co-workers, mishap prevention reaches an all-time high.

There is a potential for accidents to happen in every job environment. It is essential that each employee understand the hazards associated with their work and the importance of promoting and following all safety and environmental rules, regulations, and applicable procedures. Our management team is dedicated to achieving the safest possible workplace while ensuring no harm comes to the world in which we all live. Every member of our Safety and Mission Assurance Office assists in developing and structuring programs that, with your cooperation, ensure safety and environmental protection at each of our work areas.

Safety and environmental stewardship is everyone's responsibility. I expect each of you to take all measures appropriate to ensuring the safety and environmental quality of your respective workplaces. You are the critical element to the success of our environmental, safety, and health program and, as such, have a strong voice in how our program is administered. In this ESH plan, we have outlined various measures to facilitate your participation in policy development and administration of the program. In addition, I have also established an ESH Hotline direct to my office where you may report unsafe conditions or provide suggestions to improve the program. Callers may remain anonymous if so desired.

As employees of Jacobs Sverdrup, ERC, and SRC, we are all fortunate to be a part of companies whose top leadership embraces their responsibilities for protecting their personnel and our environment. Our respective corporate safety incident rates measure well below the national average. Yet, our leaders also recognize that every incident that occurs is one too many – regardless of the averages. As such, I am directly responsible to my superiors for the administration of our combined safety program. Our ESH plan describes the policies, procedures, and methodology we will use here in the NTOG organization through our Integrated Team Management Approach. I have approved the content of this plan and take personal responsibility for its implementation.

b(4)

Vice President and NTOG General Manager

Introduction

Jacobs Sverdrup (JS) has developed this Environmental, Safety, and Health (ESH) Plan for implementation on the Test Operations Contract (TOC) at the John C. Stennis Space Center (SSC) and the Marshall Space Flight Center (MSFC). It is a baseline document that all managers, supervisors, team leads and employees may use for planning, managing, controlling, and implementing the NASA Test Operations Group's (NTOG) environmental, safety, and health program. The objective of this plan is to outline the process JS uses to: provide a safe and healthful workplace for personnel; ensure a low risk of harm to equipment, property or the environment; and meet the regulatory requirements of OSHA, EPA, and NASA. Nothing in this plan is intended to countermand, contradict, supplant, or contravene the requirements of the contract or the requirements promulgated by regulatory bodies having jurisdiction. Key features of the ESH program outlined in this plan are shown in Figure 1.

This ESH plan is a living, configuration-controlled document, and meets the requirements of the NASA FAR Supplement 1852.223-70 (Apr 2002), NPG 8715.1, NPG 8715.3, and DRD SA02. It identifies the means by which the JS Team members meet safety and environmental requirements and ensure the safety of NASA, resident agency, commercial customer, and associate contractor personnel, equipment, and facilities – as well as the members of our workforce. Policies and procedures described in this document apply from startup throughout the life of the contract. Reference documents are presented in Attachment 1. Given our commitment to ensure your safety and administer this program based upon the best suggestion and inputs available from each of you, we will revise this plan as necessary to incorporate those programs, policies, procedures, and findings that promote a safe and environmentally responsible working environment for each of us.

Figure 1 Key Features of Our ESH Program

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1284-021-030703

1.0 Management Leadership and Employee Participation

1.1 Policy

We hold safety and responsible environmental stewardship to be essential values on all work performed under this contract. Safety is the first essential element of mission success and implicit in the NASA Core Values and Jacobs Sverdrup Guiding Principles. Our corporate policy on environmental, safety, and health fully agrees with the OSHA General Duty clause and the NASA and SSC/MSFC Core Values. This policy states:

Our people are our most valued assets. We are committed to maintaining a safe and healthy working environment for them and for anyone who may be affected by our business. Commitment and adherence to our ESH policy is a condition of employment and a cornerstone of our business relationship with our clients, suppliers, and subcontractors.

1.2 Goals and Objectives

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1.3 Management Leadership

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1.4 Employee Involvement

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Figure 2 Features to Communicate ESH Goals/Objectives to the Workforce

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5864-085-030703

1.10 Government Access to Safety and Health Program Documentation

We recognize the right of NASA, or your delegated Government Inspection Agency to evaluate, survey, audit, and inspect the operations and work described in this plan. Any deficiencies reported to us are promptly addressed and tracked to closure. We provide NASA with information, documents, records, inspection equipment, samples, materials, and assistance for the performance of their duties whenever requested.

1.11 Reviews

We support and participate in several types of system/facility test and test readiness reviews as requested by NASA. These reviews include Operational Readiness Inspections, Safety Review Team activities, and accident investigations.

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2.0 Workplace Analyses

2.1 Hazard Identification

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1.5 Assignment of Responsibility

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1.5.1 General Manager

b(4)

1.5.2 Safety and Mission Assurance Manager

b(4)

Figure 3 NTOG S&MA Comparison

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1.5.3 Supervisors, Team Leads and Managers

b(4)

1.5.4 Employees

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1.6 Provision of Authority

Attachment 1 lists reference documents used in development and execution of our ESH program.

1.7 Accountability

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1.8 Program Evaluation

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1.9 Documentation

b(4)

Figure 4 ESH Documentation Matrix

b(4)

Figure 5 (next page) lists other written plans that are prepared in accordance with OSHA and contract specific requirements. These plans incorporate any additional requirements mandated by SSC, MSFC, or NASA Headquarters.

1.9.1 Roster of Terminated Employees

b(4)

1.9.2 Material Safety Data

b(4)

Figure 5 OSHA Required Written Plans and Corresponding Site Plans

OSHA (29 CFR) Required Plan	Corresponding MSFC Plan	Corresponding SSC Plan
Hazard Communication, 1910.1200	MPG 1840.2B, MSFC Hazard Communication Program	SPG 8715.1 SECTION II Chapter 1 Procedure 1 Hazard Communication
Control of Hazardous Energy (Lockout Tagout), 1910.147	MWI 8715.2B, Lockout/Tagout Program	SPG 8715.1 SECTION I Chapter 2 Procedure I.2.11 - Safety Requirements for Control of Hazardous Energy (Lockout/ Tagout) at SSC
Confined Space Permit System, 1910.146	MPG 1840.1A, MSFC Confined Space Entries	SPG 8715.1 SECTION II Chapter 2 – Procedure II.2.1- Confined Space Entry Program for SSC
Exposure Control (Bloodborne Pathogens), 1910.103	MPG 1800.1, Bloodborne Pathogens	TBD
Fire Safety Policy, 1910.156	MWI 8715.11B, Fire Safety Program	SPG-8838.2, Fire Prevention and Protection Program
Fall Protection, 1926.500		SPG 8715.1 SECTION 1 Chapter 2, Procedure I.2.4 – Fall Protection in Industrial & Construction Activities
Emergency Response (Hazardous Waste), 1910.120	MPG 1040.3, MSFC Emergency Plan	SPG-1040.1, NASA SSC Emergency Plan
Hearing Conservation, 1910.95	MPD 1840.2, MSFC Hearing Conservation Program	SPG 8715.1 SECTION II Chapter 1, Procedure II.1.6 – Safety and Health Requirements for Hazardous Noise Exposures
Respiratory Protection, 1910.134	MPD 1840.3, MSFC Respiratory Protection Program	SPG 8715.1 SECTION II Chapter 1, Procedure II.1.2 – Respiratory Protection Program

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1.9.3 Hazardous Materials Inventory

b(4)

Figure 6 Roster of Terminated Employees

b(4)

2.1.1 Comprehensive Survey

b(4)

2.1.2 Change Analysis

b(4)

2.1.3 Hazard Analyses

b(4)

2.2 Inspections

b(4)

2.3 Employee Reports of Hazards

b(4)

Figure 7 Safety Observation Report Form

b(4)

3.0 Mishap Investigation and Record Analysis
3.1 Mishap Investigation

b(4)

b(4)

3.2 Trend Analysis

b(4)

3.2.1 Accident/Incident Summary Report

b(4)

3.2.2 Log of Occupational Injuries and Illnesses

All OSHA-defined reportable injuries are recorded on OSHA Form 300 in accordance with OSHA instructions. We provide a copy of the OSHA Form 300 to NASA by February 10th of each year.

4.0 Hazard Prevention and Control
4.1 Appropriate Controls

b(4)

4.1.1 Hazardous Operations

b(4)

b(4)

4.1.2 Written Procedures

b(4)

text continues on page G-20

b(4)

4.1.3 Protective Equipment

b(4)

4.1.4 Hazardous Operations Permits

4.1.4.1 Operations Involving Potential Asbestos Exposures –

b(4)

4.1.4.2 Operations Involving Exposures to Toxic or Unhealthful Materials –

b(4)

4.1.4.3 Operations Involving Hazardous Waste –

b(4)

4.1.4.4 Operations Involving New or Modified Emissions/Discharges to the Environment –

b(4)

4.2 Maintaining Facilities Baseline Documentation

b(4)

4.3 Preventive Maintenance

b(4)

b(4)

Figure 9 Maintenance Technique Optimization

b(4)		
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following tangential benefits:

b(4)

4.4 Medical Program

b(4)

b(4)

/

5.0 Emergency Response
5.1 Planning

b(4)

5.2 Emergency Contacts

b(4)

5.3 Fire Response

b(4)

5.4 Spill Response

b(4)

5.5 Emergency Medical Care

b(4)

6.0 Safety and Health Training

6.1 Initial Training

Figure 10 Emergency Contact List

b(4)

6.2 Job-Specific Training

b(4)

6.3 Supervisory Training

b(4)

Figure 11 Sample Training Matrix

b(4)

REF ID: A66030703

7.0 Subcontractor Environmental, Safety, and Health

7.1 Policy

b(4)

7.2 Hazard Analyses

b(4)

7.3 Incident Reporting

b(4)

7.4 Hazardous Materials

b(4)

7.5 Enforcement

b(4)

8.0 Understanding of Voluntary Protection Program Compliance Elements

8.1 Partnership with Centers

b(4)

Figure 12 Sample Safety Notices

b(4)

b(4)

8.2 Experience

b(4)

9.0 Environmental Management

9.1 Philosophy

b(4)

9.2 Regulatory Compliance

b(4)

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Major VPP ication Status

b(4)

9.3 Air Emissions Reporting

b(4)

9.4 Planning

b(4)

9.5 The Four R Program

b(4)

9.6 Affirmative Procurement

b(4)

10.0 Summary

b(4)

Figure 15 Plan Features that Integrate ESH Compliance into Management Processes

b(4)

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Attachment 1 Reference Documents

Document/Number	Title
29 CFR 1910	Alabama Department of Environmental Management Regulations
40 CFR	Department of Labor; Occupational Safety and Health Administration Standards for General Industry
49 CFR	Protection of the Environment
NPG 8000.4	Transportation
NPG 8621.1	Risk Management Procedures and Guidelines
NPG 8715.1	NASA Procedures and Guidelines for Mishap Reporting, Investigating, and Recordkeeping
NPG 8715.2	NASA Safety and Health Handbook Occupational Safety and Health Programs
NPG 8715.3	NASA Emergency Preparedness Plan Procedures and Guidelines
NPD 1800.2	NASA Safety Manual w/Changes through Change 1, 6/19/02
NPD 8621.1	NASA Occupational Health Program
NPD 8700.1	NASA Mishap and Close-Call Reporting, Investigating, and Recordkeeping Policy
NPD 8710.1	NASA Policy for Safety and Mission Success
NPD 8710.2	Emergency Preparedness Program
NASA-STD-8719.7	NASA Safety and Health Program Policy
SPG-1040.1	Facility System Safety Guidebook
SPG-7120.1	NASA SSC Emergency Plan
SPG-8500.1	Stennis Space Center Risk Management
SPG-8500.2	Environmental Management System Procedures and Guidelines
SPG-8838.2	Environmental Operations and Implementation Program
MPD 1040.3B	Fire Prevention and Protection Program
MPD 1840.1E	MSFC Emergency Program
MPD 1840.2	MSFC Environmental Health Program
MPG 1840.2B	MSFC Hearing Conservation Program
MPD 1840.3	MSFC Hazard Communication Program
MPG 8500.1	MSFC Respiratory Protection Program
	MSFC Environmental Management Program

MPG 1840.1A	MSFC Confined Space Entries
MPG 1810.1F	MSFC Occupational Medicine
MPG 8715.1A	Marshall Safety, Health, and Environmental Program
MWI 3410.1D	Personnel Certification Program
MWI 8621.1A	Close Call and Mishap Reporting and Investigation Program
MWI 8715.11B	Fire Safety Program
MWI 8715.1A	Electrical Safety
MWI 8715.2B	Lockout/Tagout Program
MWI 8715.4B	Personal Protective Equipment
MWI 8715.6A	Hazardous Operations
MWI 8715.9B	Occupational Safety Guidelines for MSFC Contractors
JACOBS HSEPs	Corporate Health Safety and Environmental Program Procedures

Attachment 2

Definitions

Close Call. An occurrence in which there is no injury, no equipment or property damage equal to or greater than \$1,000, and no significant interruption of productive work. However, the occurrence had the potential to be an incident or Type A, B, or C mishap, mission failure, or incident.

Incident. A mishap consisting of personal injury of less than Type C mishap severity (but more than first-aid severity) or property damage equal to or greater than \$1,000, but less than \$25,000.

Type A Mishap. A mishap causing death, hospitalization of three or more patients (within 30 days), or damage to equipment, property, or the environment equal to or greater than \$1M.

Type B Mishap. A mishap resulting in permanent disability to one or more persons, hospitalization (within a 30 day period from the same mishap) of less than three persons, or damage to equipment, property or the environment equal to or greater than \$250,000, but less than \$1M.

Type C Mishap. A mishap resulting in damage to equipment, property, or the environment equal to or greater than \$25,000, but less than \$250,000, or causing occupational injury or illness that results in a lost workday case.

Safe Plan of Action (SPA) Process. The ongoing process to involve employees in improving HSE work activities by identifying potential work hazards and developing plans to eliminate or mitigate those hazards.

Safe Plan of Action (SPA). The Safe Plan of Action, also referred to as a Job Safety Analysis Pre-task Risk Assessment in some locations, is a task-driven planning document used to help ensure that every task receives proper HSE preparation before commencement of work. The entire crew assigned to perform the work develops the SPA with guidance from its supervisor/team lead. A completed SPA identifies each step of the work activity, potential hazards for each step of the work activity, individual at-risk reactions to failure, and the safe plan to deal with the potential hazards and at-risk reactions to failure and to identify necessary resources to safely complete the task.

Task Safety Awareness (TSA). The collaborative review of the SPA by the entire crew or work group and the supervisor/team lead before performing a task and at any time there is a change to the task.

Attachment 4 System Safety Plan

1.0 Introduction

b(4)

2.0 Purpose

b(4)

3.0 Objectives

b(4)

4.0 Responsibilities

b(4)

4.1 Project Manager

b(4)

4.2 System Safety Engineer

b(4)

5.0 Approach

b(4)

6.0 Hazard Identification

b(4)

Figure 16 System Safety Approach

b(4)

6.1 Preliminary Hazard Analysis

b(4)

6.2 Subsystem Hazard Analysis

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Figure 17 Safety Hazard Analysis

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Figure 18 System Safety Analysis Techniques

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6.3 System Hazard Analysis

b(4)

6.4 Operating and Support Hazard Analysis

b(4)

6.5 Risk Analysis

b(4)

6.6 Risk Assessment

b(4)

6.7 Mitigation

b(4)

Figure 19 Risk Assessment Matrix

b(4)

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7.0 Documentation

b(4)

8.0 Safety Reviews and Boards

b(4)

8.1 Preliminary Design Review

b(4)

8.2 Critical Design Review

b(4)

8.3 Test Verification

b(4)

9.0 Follow-on Work

b(4)

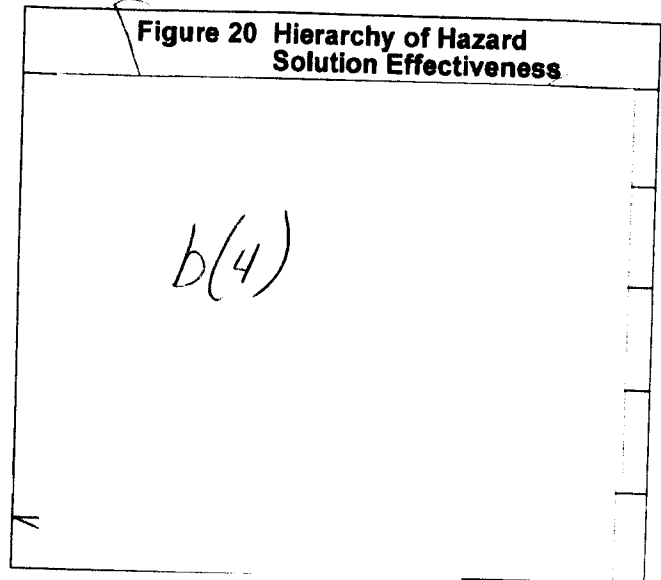
9.1 Lessons Learned

b(4)

9.2 Follow-on Analysis

b(4)

Figure 20 Hierarchy of Hazard
Solution Effectiveness



9.3 Configuration Management

b(4)

Attachment 5
Safety Certification Requirements

b(4)

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2

Attachment 6

Asbestos Exposure Protection Program

1.0 Policy

All employees engaged in operations or activities where asbestos-containing materials may be encountered shall receive the proper procedures, training, and equipment necessary to protect themselves from harmful exposure to these materials.

2.0 Purpose

This program has been established to ensure the health and safety of employees who may encounter asbestos containing materials in their work environment and who may be required to work with or around these materials.

3.0 References

OSHA 29 CFR 1926.1101: Asbestos

OSHA 29 CFR 1910.1001: Asbestos

PSM Training Program No. 029: Asbestos Awareness Course

SPG 8715.1: SSC Safety and Health Procedures and Guidelines

SCWI-8500-0019-ENV: SSC Asbestos Hazard Control Plan

Jacobs Corporate Safety and Health Procedure Number 9.1: Asbestos Exposure Protection

4.0 Definitions

Asbestos. Includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos and any of these minerals that has been chemically treated and/or altered. For purposes of this policy, "asbestos" includes PACM listed below

Asbestos Containing Material (ACM). Any material containing more than 1% asbestos

Asbestos Work. Any work with ACM as defined/covered by Asbestos Work Classes I through IV below

Asbestos Work Classes. OSHA divides ACM work into four classes as follows:

- **Class I.** Activities involving the removal of thermal system insulation (TSI) and surfacing asbestos containing materials or presumed asbestos-containing materials (PACM)
- **Class II.** Activities involving removal of asbestos-containing material that is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos containing wall board, floor tile and sheeting, roofing and siding shingles, construction mastics, gaskets and leak sealant materials
- **Class III.** Repair and maintenance operations where ACM including thermal system insulation and surfacing material is likely to be disturbed
- **Class IV.** Maintenance and custodial activities during which employees contact ACM and PACM, and activities to clean up waste and debris

Bulk Sample. A process of collecting samples of materials to be sent to a laboratory for analysis to determine whether or not the material contains asbestos, and if so, what types and percentages

Competent Person. One who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, and who has the authority to take prompt corrective measures

Excursion Limit. 1.0 fiber per cubic centimeter (1.0 f/cc) averaged over a 30-minute period. This is the maximum concentration of airborne asbestos an employee may be exposed to during any 30-minute period during a work shift without the use of protective measures such as respirators or protective clothing

Exposure Assessment. Air monitoring done to determine employee exposure to airborne asbestos, which is compared to the PEL and Excursion Limit

High Efficiency Particulate Air (HEPA) Filter. A filter capable of trapping and retaining at least 99.97 of all single dispensed particles of 0.3 micrometers in diameter

Negative Exposure Assessment. A demonstration by the employer that employee exposure during an activity is expected to be consistently below the PEL

Permissible Exposure Limit (PEL) – 0.1 fiber per cubic centimeter (0.1 f/cc) time weighted average (TWA) for an eight-hour period. The maximum concentration of airborne asbestos an employee may be exposed to during an 8-hour work shift without the use of protective measures such as respirators or protective clothing

Presumed Asbestos Containing Material (PACM). Materials suspected of containing asbestos but which have not been positively identified as not containing asbestos. These are normally sprayed or troweled on materials in buildings and facilities constructed prior to 1980. These materials are treated as asbestos containing material until they are determined to not contain asbestos

Regulated Area. An area established to demarcate areas where Class I, II, and III asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work accumulates; and any work area which exceeds, or where there is a reasonable possibility to exceed the PEL

Surfacing Materials. Asbestos-containing material sprayed or troweled on surfaces (walls, ceilings, structural members) for acoustical, decorative, or fireproofing purposes

Thermal System Insulation (TSI). Insulation used to inhibit heat transfer or prevent condensation on pipes, boilers, tanks, ducts, and various other hot components. This includes pipe lagging, pipe wrap, block, batt and blanket insulation, cements and “muds”, and a variety of other products

Wetting Agent. Water to which a surfactant has been added to increase the ability of the liquid to coat, penetrate, and stick to ACM

5.0 Responsibilities

5.1 General Manager

5.2 Supervisors/Team Leads

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5.3 Safety and Mission Assurance Manager

b(4)

5.4 Employees

b(4)

5.5 Competent Person

b(4)

6.0 Training and Certification

Site-specific asbestos awareness training is required prior to initial assignment and annually thereafter for all employees who may encounter ACM as part of their routine work activities. All repair or maintenance work with potential for disturbing ACM may only be performed by a NASA Certified Asbestos Maintenance Worker. There are two levels of Asbestos Maintenance Work certifications at SSC – Level I and Level II. Level I work is restricted to work proximate to spray-applied asbestos insulation (SAAI), work involving non-friable ACM, and minor cleanup and repair activities. Level II work includes small-scale, short-duration (SSSD) asbestos removal (e.g., limited to one glove-bag, as needed to perform necessary maintenance). The Asbestos Maintenance Worker certification includes asbestos maintenance work practices training, respiratory protection training, and respirator fit testing. Certification is obtained prior to or at the time of initial assignment, unless the employee has received equivalent training within the past 12 months. Competent Persons supervising Level I

and Level II jobs complete Asbestos Supervisor Training. Records of all training are maintained as part of the employee's file.

7.0 Exposure Potential

NTOG personnel performing work under the SSC and MFSC TOC contract do not participate in Class I or Class II asbestos removal activities. However, with the abundance of ACM in our workplaces, our employees are potentially exposed to asbestos from time to time and must be aware of the hazards of asbestos and, if applicable, the general locations of ACM in work environments. Buildings 1000, 1100, 1200, and parts of 2101 and 2201, at SSC have SAAI in the plenum space above suspended ceilings. Asbestos-containing thermal insulation is present in the majority of the mechanical equipment rooms at SSC. Asbestos inventory information at SSC can be obtained from the FOSC Environmental Health Office.

In structures built prior to 1980, all roofing, resilient flooring, insulation, soundproofing, and surfacing materials should be assumed to contain asbestos (PACM) until positively proven otherwise through analysis (bulk sampling). Any intrusive activity such as repair and maintenance, alteration, removal, and demolition may be considered asbestos activity. Cleanup of materials from damaged or deteriorated buildings during building custodial activities is considered asbestos activity.

Employees may encounter ACM when:

- Removing or replacing gaskets and leak sealant materials
- Removing, installing, or otherwise disturbing roofing and siding
- Cutting or otherwise disturbing insulating, fireproofing, or soundproofing materials to gain access to equipment
- Mixing cement or fireproofing materials
- Opening boxes containing gaskets, insulation, and brake and clutch pads
- Spraying insulation or fireproofing
- Using fire blankets or hot gloves
- CAD welding

Personnel not certified to perform asbestos abatement or asbestos maintenance work at SSC are prohibited from performing work on or proximate to friable ACM, including accessing the plenum space above suspended ceilings where SAAI is present, and on building systems which may require the potential disturbance or removal of asbestos (e.g., plumbing repair on asbestos insulated piping)

7.1 Exposure Assessments and Permissible Exposure Limits

Each workplace or job task with asbestos work nearby is assessed to accurately determine the airborne concentrations (air monitoring) of asbestos to which employees are exposed. The Competent Person performs the initial and subsequent daily monitoring as required by OSHA 29 CFR 1926.1101. Representative exposure assessments of each employee shall be made. The exposure assessments are made on the basis of a representative 8-hour TWA. Employees are not allowed to work in areas that exceed the PEL.

The results of exposure assessments are retained with the employees' medical records by the Corporate Occupational Health Services Department. All employees who participated in personal exposure assessment monitoring are notified of the results upon receipt, regardless of the fiber count.

Ambient airborne fiber levels are monitored annually in the areas where SAAI is present. The results of this sampling are made available in the NASA Environmental Office after October 1 each year.

7.2 Negative Exposure Assessment

A Negative Exposure Assessment means that for any one asbestos job, under the worst conditions, the levels of airborne asbestos fibers will not exceed the PEL or excursion limit. The Competent Person uses one of the following methods to establish a Negative Exposure Assessment:

- Basing the exposure determination on data collected from prior jobs, conducted under similar conditions and with similar materials, and demonstrating that these job activities cannot release asbestos fibers in concentrations exceeding the PEL or Excursion Limit
- By exposure assessment data collected in the last 12 months of similar jobs, under similar conditions with similar materials, which indicates that exposures will not exceed the PEL or Excursion Limit
- By initially monitoring the job being undertaken and determining that the level of asbestos exposure is below the PEL and Excursion Limit

All asbestos-related work activities and tasks are to be conducted under the assumption that airborne asbestos levels might exceed the PEL and adequate protective measures to protect employees from possible harmful exposures are provided until a Negative Exposure Assessment has been completed.

8.0 Work Practices

The following work practices are used when performing Class III or IV operations and maintenance work:

- The supervisor for the personnel performing the work completes an Asbestos Maintenance Work Application/Authorization Form and submits it to the FOSC Environmental Health Office. The Environmental Health Office assigns a project number to the request, verifies certifications of the personnel assigned to the job, and submits the form to the SSC Asbestos Program Manager for approval. A copy of the approved form is kept with the workers while performing the work
- The work area is isolated and warnings posted before beginning any asbestos-related work. Restrict area access at the point of permanent walls and doors that can be posted or secured to prevent unauthorized entry. If area restriction is not possible during normal working hours, the project must be performed outside normal working hours

- Impermeable polyethylene drop cloths are placed below all removal activity wherever feasible. This cloth shall be large enough to protect anything under the work from asbestos contamination. If a drop cloth is not used, all surfaces beneath the work area must be decontaminated upon completion of the work
- All asbestos removal activity is performed using wet methods or wetting agents, unless this wet activity creates greater hazards (e.g., electric shock or roof slip and fall hazards)
- Dry cleanup of ACM or PACM is prohibited, including dry sweeping and shoveling
- High-speed abrasive disc equipment use is prohibited (unless equipped with HEPA dust collection features)
- Compressed air is prohibited to remove ACM or PACM or cleanup debris
- Promptly cleanup and dispose of any ACM or PACM waste and debris in leak tight containers
- Cleanup is performed using vacuums with HEPA filters
- Any used materials containing ACM or PACM are considered to be hazardous. ACM or PACM waste and debris are disposed of in sealed leak-tight containers
- The polyethylene ground cover is treated as asbestos waste. It is vacuumed and removed a layer at a time with employees still fully protected
- All waste materials potentially contaminated with asbestos (e.g., disposable coveralls, respirator cartridges, plastic drop cloths) are collected in a 6-mil disposal bag and sealed shut. This bag is placed in a second 6-mil disposal bag, labeled with the appropriate asbestos warnings, and sealed. Any broken/damaged bags are re-bagged as soon as possible before removal from the work area
- All asbestos waste containers (bags/drums) are properly labeled. Labels are visible and read:

Danger
Contains Asbestos Fibers
Avoid Creating Dust
Cancer and Lung Disease Hazard

- Asbestos waste cannot be mixed with any other refuse materials

The supervisor completes a Mississippi Office of Pollution Control Demolition/Renovation Notification Form. The form is submitted to the Environmental Health Office for review, before submission to the NASA Environmental Officer for approval. After obtaining approval, the completed form accompanies the waste to the SSC landfill.

9.0 Personnel Protection

Personnel performing maintenance work proximate to friable ACM, or causing nonfriable ACM to become friable, must wear appropriate personal protective equipment during the performance of this work. This equipment includes, at a minimum, a fitted negative pressure air-purifying respirator equipped with HEPA filters and disposable coveralls with head, foot, and hand coverings. Street clothing is not worn under disposable protective coveralls. Each worker uses a new coverall with hood and boot coverings each time he/she exits and re-enters the work area. Eye protection is worn as required by the job safety plan and the situation. All disposable protective clothing is disposed of as asbestos waste when exiting the work area.

Employees receive respiratory training and a physician's approval as part of the medical examination criteria before assignment to tasks requiring the use of respiratory protection equipment. A Competent Person familiar with respiratory equipment, the type of work to be performed, and the

expected hazards selects the respiratory equipment. A Competent Person familiar with asbestos fit testing requirements conducts fit testing for respirators at least every six months. A summary of each employee's fit tests is maintained as part of the employee's file.

10.0 Medical Surveillance

Medical surveillance examinations are required for all employees performing asbestos work 30 or more days per year, or who may be exposed to asbestos in excess of the PEL or Excursion Limit on one or more days per year. Medical surveillance examinations are conducted by, or under the direction of a licensed physician and are repeated annually. The physician informs the employee of the result of the examination and issues a written opinion to the Company and employee regarding the employee's fitness for asbestos work activities.

PART III – PERFORMANCE STANDARDS AND WORKLOAD INDICATORS

ATTACHMENT J-12

PERFORMANCE STANDARDS AND WORKLOAD INDICATORS

Number	Performance Service	Workload Ind. SSC	Workload Ind. MSFC	Performance Standards	Acceptable Quality Level
1.0	Management And Administration				
1.1	Administer Integrated Contract Team	Contractor determined	Contractor determined	Ensures contract compliance with Public Laws, Executive Orders, contract clauses and provisions; project management ensures that all work is conducted in a high quality manner and safe environment;	No violations or non- compliances of Public Laws (PL), Executive Orders (EO), FAR/NFS contract clauses promulgated by PL or EO; no OSHA citations or EPA violations, no Department of Labor (DOL) violations; or major breach of security. No non-compliance with ISO 9001 and ISO 14001 in such a way to jeopardize ISO Registry.
1.1.1	Provide technical staff that are trained and certified in all necessary skill types for rocket propulsion test activities (applicable at all sites)	Contractor determined	Contractor determined	Provides necessary personnel and resources, except those Government Furnished, to accomplish work and complies with all other terms and conditions of the contract; project management ensures test equipment, GSE, and other items are in 'test' ready condition and instrumentation systems are operable.	Retention of qualified and proper mix of personnel and resources to accomplish required work. No instances of Facility not being ready for test conduct, tests not completed on schedule, or primary objectives not met because of the improper skill mix, non-certified personnel.
1.1.2	Conduct and maintain a comprehensive program of safety and mission assurance (S&MA) and environmental protection	See S&MA workload indicator document	8 Survl. Reports per month 30 JHA's All Hands Safety per month Company safety meeting per week (44) building inspections per	(a) Accident or exposure resulting in a fatality, mission failure, damage to equipment or property equal to or greater than \$1 million,	(a) No Class A, B or C mishaps. No OSHA reportable violation, no personnel injuries due to unsafe acts or conditions

Number	Performance Service	Workload Ind. SSC	Workload Ind. MSFC	Performance Standards	Acceptable Quality Level
			month Contractor determined	(b) Compliance to SPG8715.1 and all other agency, state, federal and local regulations and guidelines. (c) Mission assurance and quality management system compliance with customer requirements And compliance with MSFC/SSC Quality Management System documents (MPD 1280.1, SLP 02 , ISO9001, etc	(c) No missed/bypassed Mandatory Inspection points (MIP) No more than 5% rework of any task due to Contractor error or deficiency. No NASA Discrepancy Reports (NDR)
1.1.2.1	Conduct operations safely	Contractor determined according to proposed S&MA plan and relevant workload indicators.	Contractor determined according to proposed S&MA plan and relevant workload indicators. Contractor determined	See 1.1.2	See 1.1.2
1.1.2.2	Develop and maintain a mission assurance and quality management system	Contractor determined according to proposed S&MA plan and relevant workload indicators.	Contractor determined according to proposed S&MA plan and relevant workload indicators. Radiography P.O	See 1.1.2	See 1.1.2
1.1.2.3	Conduct and manage work activities in compliance with all applicable state, federal, local, and agency environmental regulations	Contractor determined	Contractor determined	See 1.1.2	See 1.1.2
1.2	Utilize existing automated work authorization systems	Contractor determined	Contractor determined	Utilize existing work authorization systems	N/A
1.3	Effectively manage cost and schedule performance in	Contractor determined	Contractor determined	Operate within designated budget.	

Number	Performance Service	Workload Ind. SSC	Workload Ind. MSFC	Performance Standards	Acceptable Quality Level
	accordance with approved operating plans and report resources status			Financial data and reporting requirement deliverables are current, accurate, and delivered in a timely manner.	
1.4	Report project performance	Contractor determined according to required DRs	Contractor determined according to required DRs	Management plans, performance reporting requirements, other data requests, and status reporting are current, accurate, and delivered in a timely manner.	
1.5	Provide procurement and property management for equipment	See equipment and facilities list	See equipment and facilities list	Maintain accurate accounting of inventory items. All required inventory items will be configured and ready for test Manage and coordinate the procurement of all supplies, materials, equipment, and services needed to meet test schedule.	
1.6	Administer the Rocket Propulsion Test Management Board (RPTMB) and the National Rocket Propulsion Test Alliance Processes (NRPTA)	Weekly RPTMB Meetings 4 Conferences per year 20 Presentations Prepared	N/A	Timely and accurate administration of RPTMB and NRPTA processes	
1.7	Develop Customer Outreach	Support two government engineers in developing technical documents and discussions.	N/A	Timely and complete formulation and implementation of customer outreach in accordance with the work authorization documents.	No violations in the proprietary handling of information gathered in the development of new business.

Number	Performance Service	Workload Ind. SSC	Workload Ind. MSFC	Performance Standards	Acceptable Quality Level
1.8	Formulate Test Project Concepts	Support two government engineers in developing technical information. In past two years: No entire packages were completed by Contractor; 6 partial costs estimates per year.	N/A	Timely and complete formulation of test project concepts (cost estimates, customer agreements, and phase 0 PRD's) in accordance with the work authorization documents.	
2.0	Test & Engineering Core Capability				
2.1	Engineer, operate, maintain, and manage test core capabilities	Contractor determined according to proposed operations and staffing plan developed with detailed workload indicators.	Contractor determined according to proposed operations	All necessary core capabilities available as required for test.	No test delays due to the Contractor deficiencies.
2.1.1	Plan, procure, receive, and handle consumable propellants and pressurants	See Test And Support History Summary for details. Summary: FY99-2,489 trls FY00-5,391 trls FY01-5,470 trls	N/A	Propellant quantities to support test schedules. Pressurant levels to support activity at SSC:	See 2.1
2.1.1.1	Provide Propellants Management for propellants and pressurants	See Test And Support History Summary for details. Summary: FY99-2,489 trls FY00-5,391 trls FY01-5,470 trls	Collect & consolidate yearly long range propellant forecast sheets provided by MSFC test engineers		See 2.1
2.1.1.2	Operate and maintain propellant and pressurant systems.	See Test And Support History Summary for details.	N/A		See 2.1
2.1.1.3	Operate and maintain high pressure gas systems.	See Test And Support History Summary for details.	N/A	See Test And Support History Summary for details: HPG Test Summary: He=3500psi min	See 2.1

Number	Performance Service	Workload Ind. SSC	Workload Ind. MSFC	Performance Standards	Acceptable Quality Level
				GN=3200psi min Air=1500psi min GH2=2500psi min	
2.1.2	Operate and maintain high pressure industrial water systems (HPIW) required for deluge and fire suppression	See Test And Support History Summary for details. In addition to normal maintenance, the TOC will perform the refurbishment of three Nordberg diesel engines at a rate of approximately two per year.	N/A	Industrial water for deluge and cooling: 250,000 gpm at 250 psi for A/B Summary: Pumps normally operated from 1 hour before A/B test through test completion. Num. pumps normally operated: A1-7; A2-8; B1/2-9	See 2.1
2.1.3	Track, monitor, and install mechanical and electrical components to meet test needs	Assure components used in systems for which the Contractor is responsible are maintained with proper certifications and calibrations.	Mechanical Components per year FY00 = 980 FY01 = 971 FY02* = 1077 * Data thru 10/2/02 Electrical Components per Year FY00 = 500 FY01 = 500 FY02 = 500	Certified components available as required to support test.	See 2.1
2.1.4	Manage test data, including delivery, storage, dissemination, and archiving	Provide data services for E Complex, see Test And Support History Summary for number of tests.	N/A	Data processing, storage, delivery, and archival.	See 2.1
2.1.5	Operate and maintain emergency power generators to provide emergency backup power	Generator service requested for A/B tests approximately 90% of tests. See Overall Test Sheet for number of tests.	N/A	Emergency back-up power for A/B complex: 2 MW Generators operated at request of A/B Complex test operations engineers.	See 2.1

Number	Performance Service	Workload Ind. SSC	Workload Ind. MSFC	Performance Standards	Acceptable Quality Level
				Operations normally last a minimum of one shift, but less than two shifts in a day.	
2.1.6	Perform test stand operator maintenance and integrate all maintenance activities.	See SOMRD (in tech. Library) for details of systems responsibilities.	See component data in section 2.1.4 and other relevant work load indicators	Timely and complete performance of required maintenance.	See 2.1
2.2	Operate and maintain the existing secure configuration management and control system for all test projects, facilities, systems, subsystems, and components for each site	FY02 (through July) 81 EO's; 92 ECR's; 941 Drawings Released; 18 CM meetings FY01 47 EO's; 52 ECR's; 1576 Drawings released; 44 CM meetings	See MSFC TOWIS and other relevant work load indicators	Accurate and timely documentation of configuration changes as submitted. MSFC: Operate and input into WATS, as per TD70-003. Generate and maintain test facility drawings, as per TD70-005. SSC: Operate and maintain Windchill CM system.	See 2.1
2.3	Develop and maintain documentation utilizing existing systems	See Level 3 Quality Management System documentation for workload requirements.	See MSFC TOWIS and other relevant work load indicators	Properly formatted and archived products. MSFC: As per MPG1440.2 TD70-003 & TD70-004, and all applicable OI's. SSC: Use CEF and Tech Doc system.	MSFC: Contractor shall prepare and maintain procedure without impacting test schedule.
2.4	Develop and maintain analytical tools and methodologies	Total number of analyses is approximately 400	N/A	Documented demonstration/validation of analytic models' accuracy in an applicable RPT environment and test operation condition. Documentation will include a technical description of the	Analytical results within 5% on high fidelity models and 10% on low fidelity models relative to applicable test environment.

Number	Performance Service	Workload Ind. SSC	Workload Ind. MSFC	Performance Standards	Acceptable Quality Level
				analytic model, its application in test systems design and analysis and the procedures for its operation.	
2.5	Identify, evaluate, and adapt new test technology and systems to continually improve propulsion system ground testing	Approximately 20 promising technologies reviewed (per year) for the improvement of test safety and efficiency.	N/A	Demonstrate technical leadership in chemical rocket propulsion systems test and related technology development.	<p>Identify a minimum of six (6) promising technologies and field a minimum of two (2) field applied technologies per year that improve the safety and efficiency of testing.</p> <p>A minimum of four (4) mutually unique test technology technical papers accepted by a nationally recognized professional society in research or applied science.</p> <p>Maintain membership in three (3) national/international Technical Committees on propulsion systems and propulsion systems ground testing</p>
2.6	Plan, evaluate, engineer, and support construction of test facility modernization and improvements	Approximately \$600,000 in yearly maintenance projects (approx. 15 separate projects) implemented by TOC; 1 yearly call for proposed maintenance projects; 1 yearly call for Coff projects; 2 ongoing Coff projects affecting TOC facilities; attend approximately 100 design reviews.	N/A	Complete and timely input for construction planning, design, and implementation.	
2.7	Provide a comprehensive plan to operate and maintain core capability	1 plan/yr. for both centers (DR PT 09)	1 plan/r. for both centers (DR PT 09)		

Number	Performance Service	Workload Ind. SSC	Workload Ind. MSFC	Performance Standards	Acceptable Quality Level
3.0	Test Project Implementation and Test Performance Capability				
3.1	Support, schedule, and manage projects	No Contractor personnel have acted as overall project manager to date. Past requirements have been for support.	N/A	Complete and timely project management functions including PRD's, customer interfacing, budgets, and schedules.	
3.1.1	Develop Project Plans	No Contractor personnel have acted as overall project manager to date. Approximately 3-5 new project plans are developed yearly.	N/A	Timely and complete new project plans.	
3.1.2	Provide project management and systems integration engineering support	No Contractor personnel have acted as overall project manager or systems integration engineer to date.	N/A	Input as required for program management and systems integration engineering.	
3.1.3	Manage projects	No Contractor personnel have acted as overall project manager to date.	N/A	Manage test project from initial requirements through close out.	
3.1.4	Schedule and integrate projects	Approximately 12 schedules are active or in development at any time. These schedules contain between 500-750 line items each and are updated daily with a schedule status summary e-mailed twice daily.	Maintain a weekly schedule for all MSFC Test Facility	Complete and timely schedules for ongoing test projects utilizing Microsoft Project.	90% of schedules updated on time as required by project.
3.2	Design and develop test systems	Approximately 24 design packages in FY02 (through July) and 24 designs in FY01.	N/A	Sufficient and effective design and drafting of test facilities and operating systems with accompanying analyses and operating procedures to	No instances of the test facility being not ready to conduct tests due to safety, performance, cost, or schedule problems related to the Contractor's design of the test facility.

Number	Performance Service	Workload Ind. SSC	Workload Ind. MSFC	Performance Standards	Acceptable Quality Level
				validate adequacy of the design in meeting safety, operating, cost and schedule requirements defined in the test project requirements document, according to applicable SOIs	Less than 5% rework of schematics or drawings due to drafting, design or analysis errors/omissions unrelated to test project system design changes.
3.2.1	Design and analyze mechanical systems	See 3.2	N/A	Sufficient and effective design of the mechanical systems of a test facility that accommodates all test project safety, operating, cost and schedule requirements.	See 3.2
3.2.1.1	Design and analyze propellant systems	See 3.2	N/A	Ensure design and development of safe, reliable and efficient cryogenic and storable propellant delivery systems.	See 3.2
3.2.1.2	Design and analyze pressurant and purge systems	See 3.2	N/A	Ensure design and development of safe, reliable and efficient pressurant and purge systems.	See 3.2
3.2.1.3	Design and analyze components	See 3.2	N/A	Accurate and complete propellant, pressurant, purge, hydraulic and pneumatic system component specification and vendor submittal review and component selection.	See 3.2

Number	Performance Service	Workload Ind. SSC	Workload Ind. MSFC	Performance Standards	Acceptable Quality Level
3.2.1.4	Design and analyze hydraulic and pneumatic systems	See 3.2	N/A	Ensure design and development of safe, reliable and efficient hydraulic and pneumatic systems.	See 3.2
3.2.2	Design and analyze electrical systems	See 3.2	N/A	Sufficient and effective design of test facility electrical, instrumentation and test operations controls and measurement systems along with procedures that accommodate all test project safety, operating, cost and schedule requirements.	See 3.2
3.2.2.1	Design and analyze data acquisition systems	See 3.2	N/A	Sufficient and effective design of test facility LS and HS DAS and procedures that accommodate all test project safety, operating, cost and schedule requirements.	See 3.2
3.2.2.2	Design and analyze test control systems	See 3.2	N/A	Sufficient and effective design of test facility controls systems and procedures that accommodate all test project safety, operating, cost and schedule requirements.	See 3.2
3.2.2.3	Design and analyze instrumentation	See 3.2	N/A	Ensure design of adequate test performance measurement instrumentation to accommodate all test project safety, operating, cost and schedule requirements.	See 3.2
3.2.2.4	Design and analyze ancillary systems - fire detect, video, oral warning	See 3.2	N/A	Ensure design of fire detection, video and oral warning systems to accommodate	See 3.2

Number	Performance Service	Workload Ind. SSC	Workload Ind. MSFC	Performance Standards	Acceptable Quality Level
				all test project safety, operating, cost and schedule requirements.	
3.2.3	Draft designs utilizing Autocad and Pro/Engineer	See 3.2	Update and distribute approximately 45-50 drawings per month	SSC: Provide accurate and detailed test facility piping and instrumentation schematics along with solid model drawings within test project budget and schedule requirements. MSFC: Provide timely and accurate drawing support per TD70-005 utilizing existing CAD System (AutoCAD)	See 3.2
3.2.4	Conduct special studies	Approximately 5 per year	N/A	Sufficient and effective evaluations and conceptual studies on test systems as required.	See 3.2
3.3	Fabricate and install test system	See Test And Support History Summary for indication of new programs per year.		Completed test systems and subsystems as required.	No impact to test schedule and adherence to all NASA and industry codes for mechanical and electrical systems.
3.3.1	Fabricate mechanical systems	See 3.3 Weld inspection provided by FOS Contractor	10 design packages per year. (See Tech. Library for examples) Visual welding inspections radiographic penetrant inspection is project dependent	Completed mechanical systems and subsystems as required including tubing, components, and vessels.	See 3.3
3.3.2	Fabricate electrical systems	See 3.3.1	See MSFC TOWIS (in Tech. Library) and other relevant work load indicators	Completed electrical systems and subsystems as required including data acquisition, test control, instrumentation, and ancillary	See 3.3

Number	Performance Service	Workload Ind. SSC	Workload Ind. MSFC	Performance Standards	Acceptable Quality Level
				systems.	
3.4	Activate test systems	See Test And Support History Summary for indication of new programs per year.		Complete system performance check under normal operating conditions.	No instances of the test facility being not ready to conduct tests due to safety, performance, cost, or schedule problems related to activation of the test facility.
3.4.1	Develop Facility Activation Plan	See 3.4	N/A	Complete plan, or inputs to a complete plan, detailing the method and steps necessary to safely complete a facility activation.	See 3.4
3.4.2	Activate mechanical systems	See 3.4	See MSFC TOWIS and other relevant work load indicators	Operation of mechanical systems as required to perform a test system activation.	See 3.4
3.4.3	Activate electrical systems	See 3.4	See MSFC TOWIS and other relevant work load indicators	Operation of electrical systems as required to perform a test system activation.	See 3.4
3.4.4	Activate integrated systems	See 3.4	See MSFC TOWIS and other relevant work load indicators	Operation of all integrated systems necessary to safely complete a facility activation.	See 3.4
3.5	Conduct test	No Contractor personnel have acted as Test Director to date. Past requirements have been for personnel to act as members of an integrated test team providing operations engineers as required and all test technician labor.	No Contractor personnel have acted as Test Director to date. Past requirements have been for personnel to act as members of an integrated test team.	Operate all systems as required to safely complete a test.	
3.5.1	Conduct pretest operations	See Test And Support History Summary for indication of tests per year.	No Contractor personnel have acted as Test Director to date. Past requirements have been for personnel to act as	Completion of all steps required before a test including all test article receipt and preparation, all reviews and pre-	

Number	Performance Service	Workload Ind. SSC	Workload Ind. MSFC	Performance Standards	Acceptable Quality Level
			members of an integrated test team.	test checks, and operation of ground support equipment.	
3.5.1.1	Test article receipt and installation	Test article Contractor is normally responsible for test article work. The TOC assists as required. On an exception basis, the TOC will be required to handle a test article. These will be specified in a programs's PRD.	On most occasions, the test article Contractor is responsible for test article. The TOC will assist in the installation and removal as required.	See 3.5.1	
3.5.1.2	Integrate test article	Work, as specified in a PRD, for each program in the E Complex.		See 3.5.1	
3.5.1.3	Setup test facility and test system	Work, as specified in a PRD, for each program in the E Complex.	See MSFC TOWIS and other relevant work load indicators	See 3.5.1	
3.5.1.4	Conduct all-up Firing Readiness Test	Work performed for each test in the E Complex.		See 3.5.1	
3.5.1.5	Conduct test readiness review	Work performed for each test in the E Complex.		SSC: See 3.5.1 MSFC: Take minutes and maintain TRR records per TD70-015.	
3.5.1.6	Present documentation for Safety Reviews	Provide information as required by each review team. This varies for each different team, its specific requirements, and the level of support required from the Contractor.	N/A	See 3.5.1	
3.5.1.7	Operate and manage all ground support equipment (supplied by hardware Contractor) required to support Test Operations	The amount and type of equipment for each program varies and is indicated in each PRD.		See 3.5.1	
3.5.2	Conduct Test	No Contractor personnel have acted as Test		Safe completion of all required operations during	

Number	Performance Service	Workload Ind. SSC	Workload Ind. MSFC	Performance Standards	Acceptable Quality Level
		Conductor to date. Past requirements have been for personnel to act as members of an integrated test team providing operations engineers as required and all test technician labor.		an actual test.	
3.5.2.1	Load and condition propellant systems	See 3.5.2		See 3.5.2	
3.5.2.2	Conduct final facility test setups	See 3.5.2	See MSFC TOWIS and other relevant work load indicators	See 3.5.2	
3.5.2.3	Operate test systems	See 3.5.2	See MSFC TOWIS and other relevant work load indicators	See 3.5.2	
3.5.2.4	Secure and safe test facility and test systems	See 3.5.2	See MSFC TOWIS and other relevant work load indicators	See 3.5.2	
3.5.3	Conduct post test operations	Post test operations vary with each test program. See Test And Support History Summary for number of tests and programs.	See MSFC TOWIS and other relevant work load indicators	Safe completion of all required operations to place a test facility in a safe condition, prepare and disseminate collected test data, and disposition all equipment no longer needed.	
3.5.3.1	Process and transmit data	Provide data services for E Complex, see Test And Support History Summary for number of tests.	N/A	See 3.5.3	
3.5.3.2	Analyze data	As part of an integrated test team, analyze data for measurement systems anomalies.	N/A	See 3.5.3	
3.5.3.3	Review data	As part of an integrated test team, review data for measurement systems anomalies and proper number and type	N/A	See 3.5.3	

Number	Performance Service	Workload Ind. SSC	Workload Ind. MSFC	Performance Standards	Acceptable Quality Level
		of measurements.			
3.5.3.4	Inspect test article and facility at the conclusion of each test	See Test And Support History Summary for number of tests.	See MSFC TOWIS and other relevant work load indicators	See 3.5.3	
3.6	Conduct test project closeout/review	As part of an integrated test team, participate in project closeouts and reviews. See Test And Support History Summary for number of programs.	N/A	Closure of all open items at the conclusion of a test project.	
3.6.1	Prepare final reports	To date, the Contractor has not been required to prepare a report. Input has been submitted in relation to functions performed as part of the test team.	N/A	Final report indicating all accomplishments as required by the PRD.	
3.6.2	Conduct customer surveys	Currently, project managers conduct the customer surveys. No Contractor has acted as project manager.	Maximum number of surveys = 40 per year	SSC: Completed customer surveys, as required, for each ongoing or recently completed test project as required by SOI-8080-0006. MSFC: Develop and maintain customer survey database to track results and implement corrective actions.	MSFC: Implement approved customer survey process within 3 months of contract start.
3.6.3	Disposition test article and customer furnished equipment	Test article Contractor is normally responsible for test article work. The TOC assists as required. On an exception basis, the TOC will be required to handle a test article. These will be specified in a programs's PRD.	N/A	Timely and complete disposition of all test articles and customer furnished equipment as indicated in the PRD.	

Number	Performance Service	Workload Ind. SSC	Workload Ind. MSFC	Performance Standards	Acceptable Quality Level
3.6.4	Gather and incorporate lessons learned and corrective actions	Submit any lessons learned to the NASA lessons learned database and to appropriate NASA test management. Lessons learned are usually submitted by test engineers and project managers using test team input. Corrective actions may be submitted by any employee.		Submittal of all lessons learned, as required.	
3.6.5	Reconfigure test facility and systems	Reconfiguration requirements vary for each test program and are defined in the PRD. Most post program reconfiguration is considered build-up for the next program and is covered by 3.3.		Timely and complete reconfiguration of test systems and subsystems as required.	

Work Load Indicators for Stennis Space Center

A. Test And Support History Summary

Much of the work required to accomplish tests at SSC is interdependent. Since the Government desires a Contractor that can provide innovative ideas, the workload indicators should be considered as a whole as opposed to only with its specific requirement.

This attempts to indicate an overall picture of the work performed for test operations and core support in the recent past.

1. The historical number of ISO Audits supported by the TOC contractor is as follows: 80 man-hours per internal audit (4 audits per year).
2. The following table shows the tests performed in the A, B, and E Complexes with breakdowns for each year, facility, and program. It shows total number of tests and total seconds for each year.

TEST STAND	PROGRAM	FY-02 ACTUALS	FY-01 ACTUALS	FY-00 ACTUALS	FY-99 ACTUALS
A-1	X33 / ELECTRO MAGNETIC ACTUATOR				
	FIRINGS	0	4	14	18
	TOTAL SECONDS	0	121	1,473	1,571
A-1	SPACE SHUTTLE MAIN ENGINE				
	FIRINGS	6	0	0	0
	TOTAL SECONDS	2,863	0	0	0
A-2	SPACE SHUTTLE MAIN ENGINE				
	FIRINGS	20	36	53	21
	TOTAL SECONDS	12,570	19,834	29,296	9,990
B-1	RS-68				
	FIRINGS	14	64	38	2
	TOTAL SECONDS	2,825	10,981	2,621	15
B-2	CBC (Common Booster Core)				
	FIRINGS	0	5	0	0
	TOTAL SECONDS	0	564	0	0
E-1	HPD LOX TURBOPUMP				
	FIRINGS	3	7	0	0
	TOTAL SECONDS	31	19	0	0
	250K Hybrid Motor				
	FIRINGS	1	0	0	0
	TOTAL SECONDS	26	0	0	0
	650K LOX/LH Motor				
	FIRINGS	0	0	13	0
	TOTAL SECONDS	0	0	48	0
E-2	LMA - PHUS (CELL 1)				
	FIRINGS	0	22	0	0
	TOTAL SECONDS	0	530	0	0
E-3	HYBRID MOTOR FIRINGS (HYSR)				
	FIRINGS	0	1	22	66
	TOTAL SECONDS	0	10	657	1,274
	H2O2 CATALYST BED				
	FIRINGS	0	57	7	0
	TOTAL SECONDS	0	3,179	586	0
	H2O2 CAT-PACK TEST PROGRAM				
	FIRINGS	269	110	0	0
	TOTAL SECONDS	31,690	15,814	0	0
	X34 FASTRACK				
	FIRINGS	0	0	7	21
	TOTAL SECONDS	0	0	213	322
RS-76					
	FIRINGS	0	0	7	0
	TOTAL SECONDS	0	0	50	0
TOTALS					
	FIRINGS	313	306	161	128
	TOTAL SECONDS	50,005	51,053	34,944	13,172

As part of the core responsibilities at SSC, the Contractor will manage, operate, and maintain certain facilities used to support testing in all areas. Some of these systems only support the A/B Complexes, and others support all.

3. The High Pressure Industrial Water (HPIW) facility supports the A/B Complexes. It provides industrial water to the test stands and cryogenic barge docks in these areas. This water is used for cooling during testing and deluge if required at any time. It is operated for all tests in the A or B Complex. When being operated in support of test, the pumps are normally brought on line approximately one hour before the test and operated until after the test is completed. The HPIW operator is in communication with the test conductor during this time to allow for quick response to all requests.

4. The Emergency Generators, located at the HPIW facility, also support the A/B Complexes. They are operated at the request of A/B Complex test operations personnel (not TOC) and are normally used on test days for reductions in power fluctuations. Generator support is called for during approximately 90% of all tests in the A/B Complexes. The generators are normally operated for a duration of between 8 and 12 hours when requested.

5. The High Pressure Gas (HPG) facility supports all test facilities at SSC. Facilities other than the test facilities are also serviced, but are minor in comparison to the test support. Minimum pressures have been established for each test facility for test days and non-test days and are shown in the table below. Deviations from these minimums, especially on non-test days, are allowed, but must be coordinated with any affected areas before any work begins.

PRESSURANT REQUIREMENTS		
A Complex	No Testing	Testing*
GN	2800 psig	3200 psig
He	2000 psig	3000 psig
GH	1000 psig	2300 psig
Air	1500 psig	1500 psig
B Complex		
GN	2800 psig	3200 psig
He	2000 psig**	3500 psig
GH	2500 psig	2500 psig
Air	1500 psig	1500 psig
E Complex		
GN	2000 psig	3000 psig
He	2000 psig	2500 psig
GH	2000 psig	2500 psig

* Testing values are required by 1000 hours on day of test

** B1 tests require that the B Complex He be at 3000 psig during first shift the day prior to test in order to charge spin start bottles.

6. Cryogenics support is provided for all SSC test areas. This support involves the unloading of commodities from trailers at the appropriate facility along with assuring cryogenic propellant barges are delivered, as required, to the appropriate A/B test stand. This includes connecting and disconnecting. The number of propellants/pressurants trailers received is shown in the following table.

PROPELLANT TRAILER DELIVERIES - SSC					
	<u>TOTAL TRLRS.</u>	<u>LH</u>	<u>LOX</u>	<u>LN</u>	<u>HELIUM</u>
FY99	2,489	550	681	1,129	129
FY00	5,391	1,458	1,644	1,903	386
FY01	5,470	1,519	1,697	1,886	368
FY02	3,336	823	1,039	1,347	127
THRU 8/5/02					
		LH TRLR AVG. 7,000 LBS.	LOX TRLR AVG 23 TONS	LN TRLR. AVG. 23 TONS	HE TRLR AVG 185,000 SCF

The number of cryogenic propellant barges loaded is shown in the following table. It should be remembered that LOX barges are loaded directly from delivery trailers, but liquid hydrogen barges are normally loaded from the storage sphere.

PROPELLANT BARGE LOADS - SSC			
	<u>TOTAL TRLRS.</u>	<u>LH</u>	<u>LOX</u>
FY99	143	64	79
FY00	150	79	80
FY01	245	120	125
FY02	92	45	47
THRU 8/5/02			

7. Technician and engineering support for E Complex test operations and maintenance is required. The TOC provides all technician labor along with engineering personnel as required. These personnel work along side government staff as part of an integrated test team. Maintenance responsibilities are indicated in the SOMRD. Past test activity is shown in an earlier table.

8. Historical levels of work documents written for work in the E Complex and A/B Complex support are shown in the following table. Test Preparation Sheets (TPS) and Discrepancy Reports (DR) are for the E Complex; Process Plans (PP) and Discrepancy and Nonconformance Reports (D&CR) are for the A/B Complex.

WORK DOCUMENTS						
	2002 (through 10/02)		2001		2000	
	Total	Contractor	Total	Contractor	Total	Contractor
E-1						
<u>Mech TPS</u>	740	135	654	150	782	203
Elect TPS	443	310	429	369	355	257
DR	214	49	205	51	199	84
E-2						
<u>Mech TPS</u>	200	30	276	71	185	47
Elect TPS	94	64	157	76	146	55
DR	20	4	42	15	21	7
E-3						
<u>Mech TPS</u>	119	1	245	10	245	111
Elect TPS	126	3	171	26	145	30
DR	13	0	69	2	43	0
A/B Complex						
<u>Process Pns</u>						
HPIW	31	31	31	31	48	48
HPG	96	96	96	96	119	119
Cryo	20	20	88	88	103	103
Test Complex	51	51	118	118	106	106
D&CR	299	299	530	530	470	470
HPIW	33	33	64	64	71	71
HPG	105	105	170	170	141	141
Cryo	84	84	138	138	132	132
Test Complex	77	77	158	158	126	126

9. The majority of S&MA WI are driven by engineering and operational requirements; therefore the data should be developed in conjunction with other Contractor functions.

Mgmt meetings (SMC, QMC...)	4/month
- SSC Site Safety meetings	4/year
Training/Certification	5 classes/month
- SSC Cert Board	1/month
- System Maintenance	continual
Engineering Support	TBD
Work Release Support	TBD
Evaluations	As requested
Audits	4/month
Inspections (operational safety & quality)	Operations driven
- DOP/TPS, propellant delivery....	
Verifications	Operations driven
- Atmospheric, Propellant delivery....	
- Lab ops...	
- Training/cert qualifications	
- NDE...	
Hazard Analysis (PSM)	4/year
Job/Workplace Analysis	Process driven
Performance metrics	Process driven
Trend analysis	Process driven

10. The following table shows SSC Government estimated staffing for PWS Section 3 of this RFP. It is important to note that no staffing for work covered under Sections 1 and 2 is included. This would include management, clerical, S&MA, and scheduling along with any other functions required under Sections 1 and 2.

GOVERNMENT STAFFING ESTIMATE FOR SSC PWS SECTION 3

JOB TITLE	Sect. 3					Totals
	Eng/Proj Mgt	E-1	E-2	E-3	Data Processing	
Sr. Electrical Engineer	2					2
Electrical Engineer	4	3	1	1		9
Jr. Electrical Engineer	1					1
Sr. Mechanical Engineer	1					1
Mechanical Engineer	1	1				2
Jr. Mechanical Engineer	1					1
Sr. Systems Engineer	1					1
Drafter	3					3
Engineering Clerk	2					2
Tech Field Support Specialist		2				2
Facilitator		2	1	1		4
Lead Mechanical Technician		1	1	1		3
Mechanical Technician I		2	1	2		5
Mechanical Technician II		6	2	3		11
Mechanical Technician III		3	2	3		8
Lead Electronics Technician		1	1	1		3
Electronics Technical Maintenance I		2	2	1		5
Electronics Technical Maintenance II		3	3	3		9
Electronics Technical Maintenance III		3	2	2		7
Computer Scientist/Programmer					2	2
Data Operator					1	1
Video/Data Specialist					1	1
Planner/Scheduler		1	1	1		3
Totals	16	29	16	18	4	86

Work Load Indicators for Marshall Space Flight Center

Test and Evaluation Department

1. Provided within these list are typical work loads that indicate the amount of work that has occurred during the past years. Although this does not represent all the work that is done by this department, it does give an approximation of the overall work load.
2. Listed below is a snap shot in time of the active projects for FY02. The complexities of these projects differ, but the offeror will have some idea of the amount of different projects worked on during the year. Each of these requires some build-up and removal as well as test ops to be conducted.

Project	Description	Test Position
P2066	Light Weight Long Life Thrust Cell Design	116/PB
P2111	Zero Boiloff MHTB Cryocooler Testing	300
P2153	X-34 LOX Seal Tank Test	500
P2182	RBCC Vortex Chamber (Army)	115
P2242	Advanced Fuels - Round 2	HCF
P2248	Reactivation of 15 Foot Vacuum Chamber	300
P2251	24" Solid	SPTA
P2255	24" Hybrid Motor	500
P2269	Aerojet COBRA & RLX Subscale Injector/Chamber	116
P2270	Laser Ignition Test	HCF
P2271	Rocketdyne FRSC 60K Combustion Devices Testbed	116
P2290	NGC Subscale Composite LH2 Tank	4699
P2291	Rocketdyne Low Element Density Injector	116
P2317	MHTB Modifications for LN2 Test	300
P2330	Stand Preps	4670
P2331	Laser Ignition	HCF
P2335	Cryogenic Mass Flowmeter Development	test cell
P2339	Component Characterization	4674
P2341	Flow Liner Instr. Test	500
P2347	SFT Solid Fuel Tank	test cell
P2348	11" GOX	test cell
P2349	24" Solid Motor Testing	500
P311	Solid Fuel Torch (All RSRM)	TC104

3. The chart below indicates the number of test conducted on the different facilities covered under this contract.

Number of Tests Performed by Test Facility

	'00	'01	'02
500	18	42	67
300	15	16	1
116	5	17	16
115	18	14	11
104	23	8	15
103	0	0	15
SPTA	16	1	0
HCF	33	9	41
STF	8	7	0
OCF	0	23	0
4670	0	0	0
4699	0	0	5
CSF	4	0	0
110	9	0	0
TOTAL	149	137	171

4. Historical levels of TPSs written for work in the Propulsion Research Center, East Test and West Test Areas are shown in the following table. The TPS listed below are associated with the above number of tests. The TOC provides all technician labor along with craft support as required. These personnel work along side government staff as part of an integrated test team. Past test activity is shown in an earlier table.

	WORK DOCUMENTS		
	2000	2001	2002 (through 10/2)
TS115			
Mech TPS	84	105	72
Instr TPS	44	62	53
Control TPS	34	28	43
STE	30	28	17
TS116			
Mech TPS	62	80	99
Instr TPS	26	19	32
Control TPS	33	23	32
STE	10	14	18
TS500			
Mech TPS	165	187	162
Instr TPS	26	53	39

Control TPS	21	68	40
STE	23	54	23
TS300			
Mech TPS	64	79	38
Instr TPS	39	40	4
Control TPS	22	34	9
STE	30	23	12
SPTA			
Mech TPS	1	1	3
Instr TPS	1	9	2
Control TPS	1	6	1
STE	16	36	14
TEST CELLS			
Mech TPS	2	49	100
Instr TPS	12	10	72
Control TPS	8	22	19
STE	13	33	31
Other TPS			
HOT GAS			
Mech TPS	3	2	1
Instr TPS	0	0	0
Control TPS	0	0	0
STE	3	5	2
4699/STF			
Mech TPS	80	37	15
Instr TPS	56	29	3
Control TPS	33	22	8
STE	44	9	2
4670/TSB			
Mech TPS	27	43	16
Instr TPS	14	9	8
Control TPS	12	13	15
STE	3	7	8
HCF			
Mech TPS	31	22	40
Instr TPS	2	1	2
Control TPS	13	2	8
STE	2	2	2

5. Listed below is the number of cryogenic trailers and dewars that support testing in the east and west test areas. Cryogenics support is provided for TS116, TS500, 4699, and 4670. This support involves the unloading / loading of commodities from trailers at the appropriate facilities. This includes connecting and disconnecting. The operation of the trailer valves is the responsibility of the pressure and propellants Contractor. Although the chart below indicates only Lox usage, the Contractor shall be responsible for several Hydrogen storage facilities. If the need arises the Contractor shall support the unloading/loading of commodities from trailers at the appropriate facilities.

Month	LOX Trailers	LOX Dewars (160 liter)
Jun 01	0	1
July 01	0	2
Aug 01	8	3
Sept 01	12	0
Oct 01	7	3
Nov 01	8	0
Dec 01	5	4
Jan 02	0	0
Feb 02	9	3
Mar 02	9	4
Apr 02	3	0
May 02	0	0

6. The following table shows MSFC Government estimated staffing for PWS Section 3 of this RFP. It is important to note that no staffing for work covered under Sections 1 and 2 is included. This would include management, clerical, S&MA, and scheduling along with any other functions required under PWS Sections 1 and 2.

GOVERNMENT STAFFING ESTIMATE FOR MSFC PWS SECTION 3

Classification	Gov. Estimate
Control Tech.	12
Tech 4	3
Tech 3	8
Tech 2	1
Tech 1	0
Instrumentation Tech.	9
Tech 4	3
Tech 3	4
Tech 2	2
Tech 1	0
Mechanical Tech.	16
Tech 4	4
Tech 3	7
Tech 2	5
Tech 1	0
Machinist	2
Mechanical Crews	10
Equip Oprs.	2
Pipefitters	3
Millwrights	3
Carpenter	1
Laborers	1
Scheduler	1
Staffing Total	97

PART III – PERFORMANCE STANDARDS AND WORKLOAD INDICATORS

ATTACHMENT J-13

OPTIONS WORKSHEET

(This file will be found in a separate folder)

SECTION J-13

Competition Review - Option/Sole Source Review Elements (OSSRE)

Element Number	Competition Review - Option/Sole Source Review Elements (OSSRE)	Date Form Completed:	
SECTION I: General Contract Information:			
1.	1. Center		
2.	Action # (Contract #, Cooperative Agreement #, Grant #)		
3.	Was the Contract Competitively Awarded (Yes/No)		
4.	If a Follow-on is Anticipated, will it be Competed? (Yes/No)		
5.	Title/Brief Description of Action		
6.	Contracting Officer Name/Phone		
7.	COTR Name/Phone		
8.	Prime Contractor		
9.	Prime Contractor Performing Business Unit		
10.	Large Business, Small, SDB or WOB? (Identify)		
11.	Predominant Contract Type (% of Total)		
12.	If Hybrid: Secondary Contract Type (% of Total)		
13.	Multiple Award Contract (Y/N)		
14.	GWAC/GSA or other Order? (Identify)		
Period of Performance (P.O.P) & Contract Value:			
15.	<u>Dates:</u> Overall Contract P.O.P. if all Options Are Exercised	Start	End
16.	<u>Total Years:</u> Contract Length In Years (if all Opts Exercised)		Value
17.	<u>Total Value:</u> If All Options Are Exercised		
18.	Award Dates - Original Basic Contract		
19.	Value at Award - Original Basic Contract		
20.	Current Contract Value - Include Basic and Exercised Options		
21.	P.O.P - Option 1		
22.	Total Value - Option Period 1		
23.	P.O.P - Option 2		
24.	Total Value - Option Period 2		
25.	P.O.P - Option 3		
26.	Total Value - Option Period 3		

Competition Review - Option/Sole Source Review Elements (OSSRE)

Element				
27.	P.O.P - Option 3	---		
28.	Total Value - Option Period 4	---		
Element				Page 2
Number	SECTION II: Requirements and Market Factors:			
1.	Describe the Government need to be implemented by the Option	---		
2.	Have there been any changes to the Government need? (Describe)	---		
3.	Discuss How This Requirement Could be Competed (vs.Option Exer):	---		
4.	Extent of Competition Available Today:	---		
5.	Original Extent of Competition (<i>How Many Offerors?</i>):	---		
6.	Technical/Technology Changes/Advances/Breakthroughs That Enable Item #3 (competition) above:	---		
<u>The Following are Presumed to Have Been Assessed/Completed by the Center:</u>				
1.	Sufficient Funds are Available to Fund the Option			
2.	Sufficient Funds are Expected to be Available for the Life Cycle			
3.	No "Cardinal" Change to the Initially Evaluated Option			
4.	Option Will Be/Has Been Synopsized			
5.	Option Price Was Evaluated Prior to Initial Award			
6.	Admin Cost: Option Exercise v. Cost of New Contract Was Considered			

Competition Review - Option/Sole Source Review Elements (OSSRE)

Element		
7. Continuity of Operations Was Considered		
8. Cost of Disrupting Operations Was Considered		
9. Cost Reasonableness of the Option Was Assessed		
10. Economic Changes Affecting Cost/Tech Performance Considered		
Element	Date Form Completed:	
Number	Page 3	
SECTION III: Contract Performance:		
	<i>For NF 1680 elements 1.a. - 1.d., rate each on a five point scale:</i> <i>Poor/Unsatisfactory - 1 Satisfactory - 2 Good - 3 Very Good - 4 Excellent - 5</i>	
1.	<u>Contractor Performance Evaluation From NASA Form 1680:</u>	
a.	Quality:	On Basic Contract
b.	Timeliness:	On Exercised Options
c.	Price/Cost:	
d.	Other:	
<i>For Items 2. - 6., provide text answers</i>		
2.	Program Management Council (Local/HQs) Assessment/Status: ---	
3.	Results of Independent Reviews (IARs/NARs/IRs etc.): ---	
4.	<u>Responsibility (Ethics, compliance with law/regs, financial, etc):</u> ---	
5.	<u>Effectiveness of Contract Structure:</u> ---	
(How are the contract structure, incentives, contract administration requirements, etc., serving NASA's interests)		
6.	<u>Safety Performance:</u> ---	

[illegible]

Date Form Completed:

Page 4

SECTION IV: Conclusion:

Recommended Action: (Center) Select One and Explain:

Selected Action:

Do Not Exercise Option - End Contract

2. Do Not Exercise Option - Compete/Execute Alternative Strategy

Exercise Option as Originally Stipulated in the Contract

Other: _____

Narrative Explanation for Recommended Action:

Competition Review - Option/Sole Source Review Elements (OSSRE)

Date Form Completed: